US007743801B2

(12) **United States Patent**
**Janardhanam et al.**

(10) **Patent No.: US 7,743,801 B2**
(45) **Date of Patent: Jun. 29, 2010**

(54) **METHOD AND SYSTEM FOR DISPENSING ICE AND/OR A LIQUID**

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( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 626 days.

(21) Appl. No.: **11/647,830**

(22) Filed: **Dec. 29, 2006**

(65) **Prior Publication Data**

US 2008/0156395 A1 Jul. 3, 2008

(51) **Int. Cl.**
***B65B 1/04*** (2006.01)

(52) **U.S. Cl.** ..... **141/351**; 141/83; 141/95

(58) **Field of Classification Search** ..... 141/83, 141/94, 95, 96, 192, 206, 351
See application file for complete search history.

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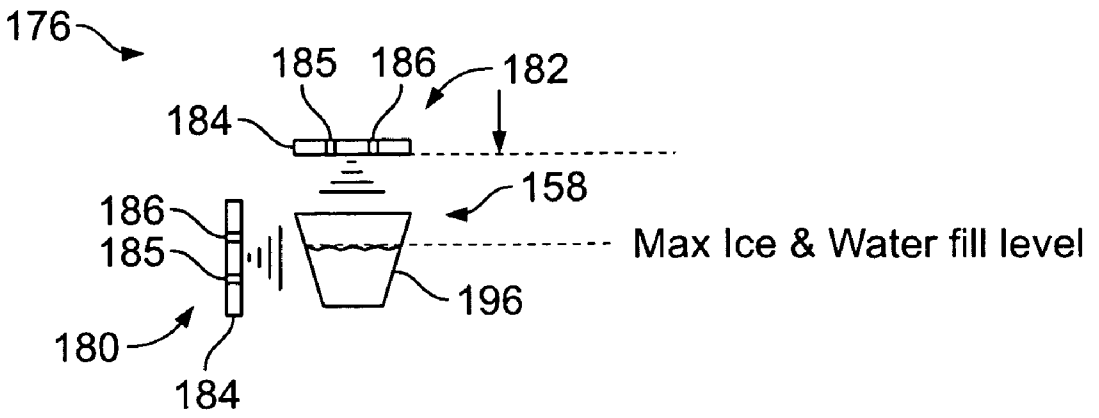
(57) **ABSTRACT**

A touchless dispensing system includes a dispenser configured to dispense at least one of ice and at least one liquid. A detection device is positioned with respect to the dispenser. The detection device is configured to detect a container positioned with respect to the dispenser without contacting the container. The detection device is further configured to generate a signal confirming a position of the container with respect to the dispenser. The dispenser is activated to dispense an amount of ice and/or an amount of the at least one liquid into the container in response to the signal generated by the detection device.

**21 Claims, 3 Drawing Sheets**



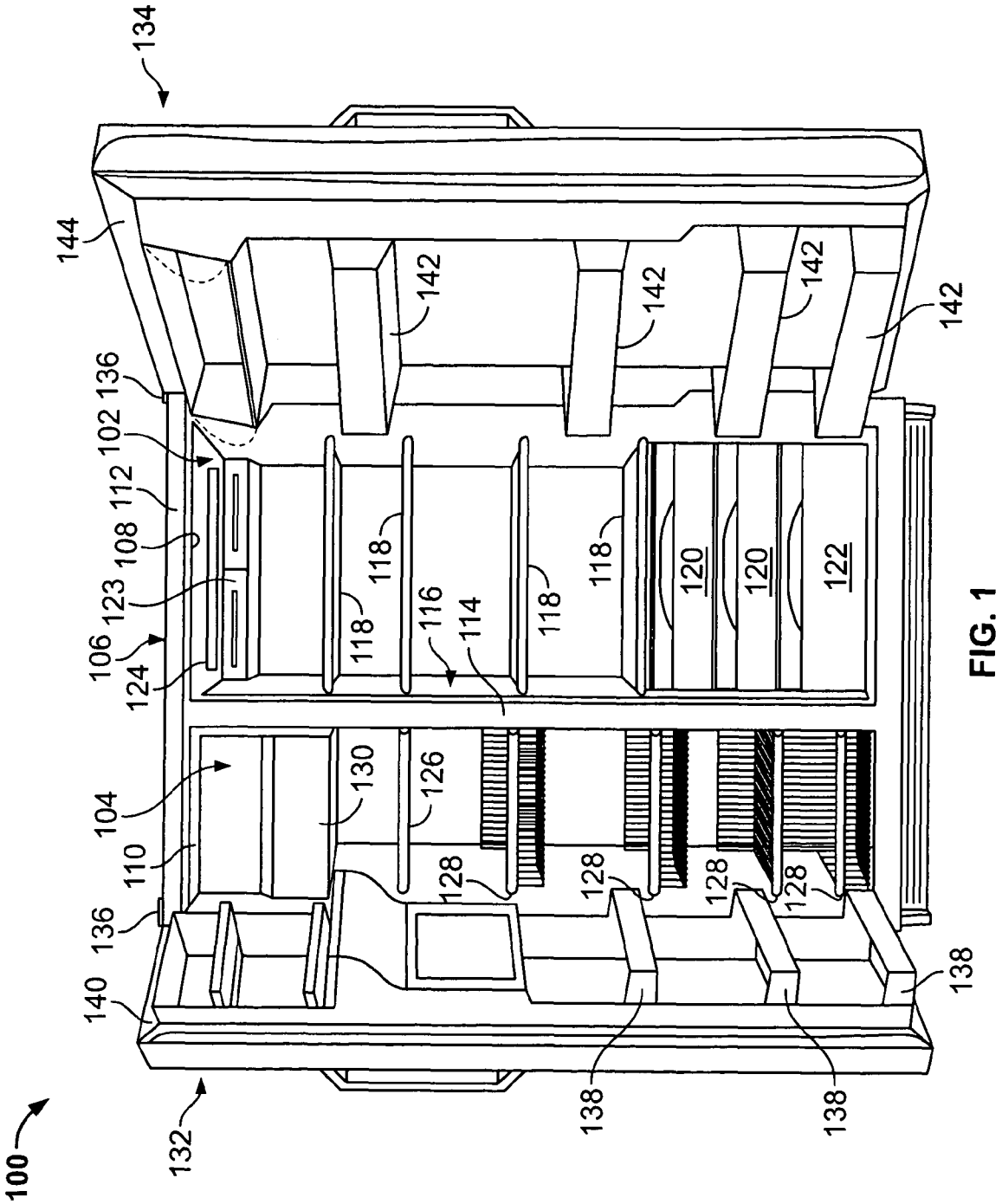

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FIG. 1

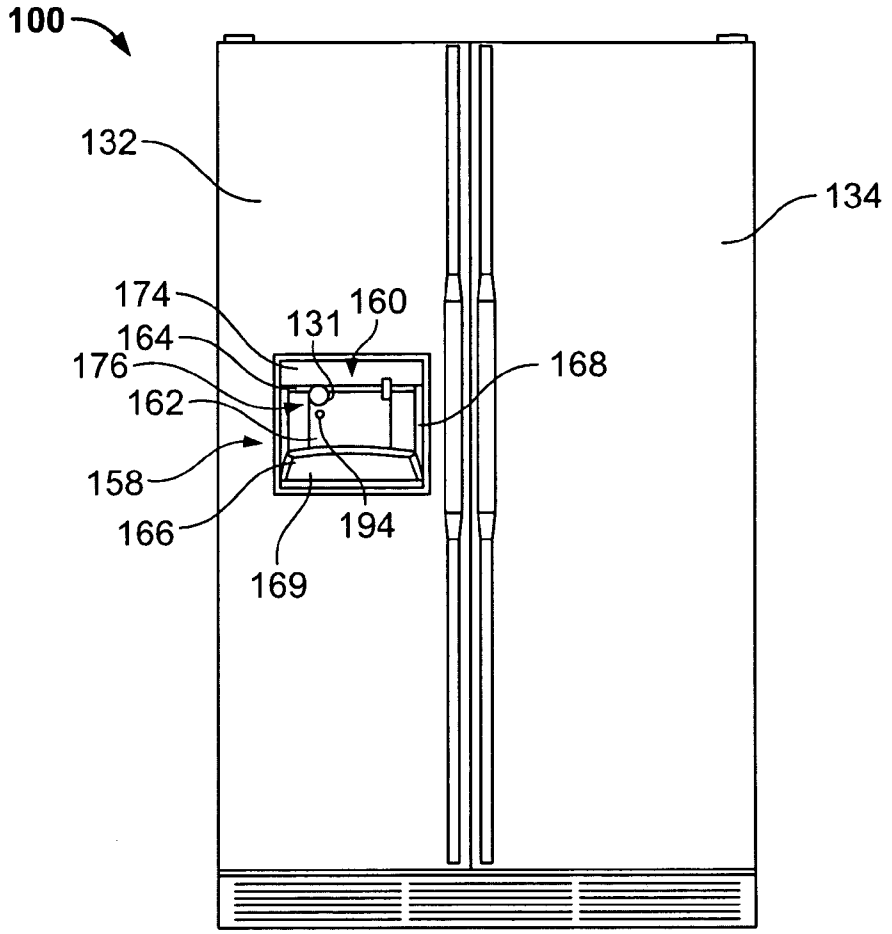


FIG. 2

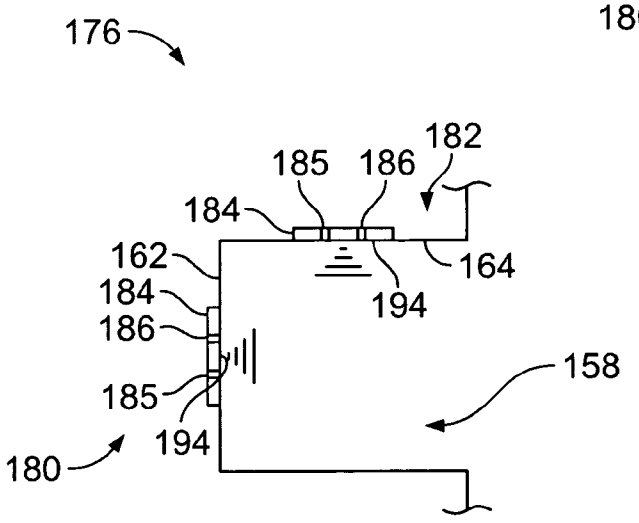


FIG. 3

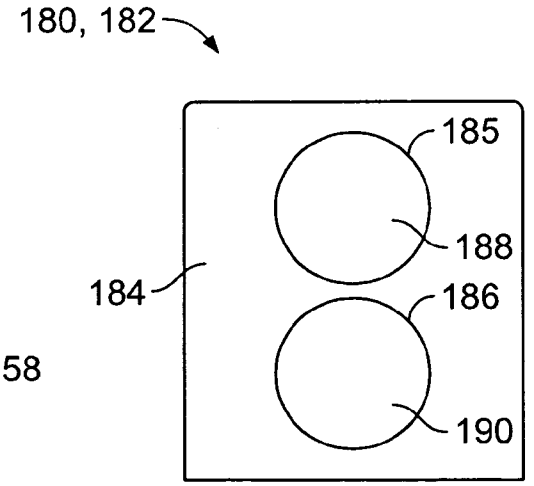


FIG. 4

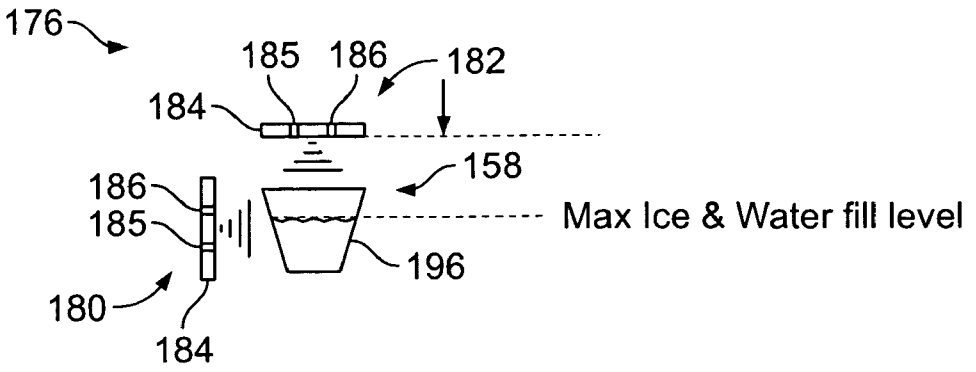


FIG. 5

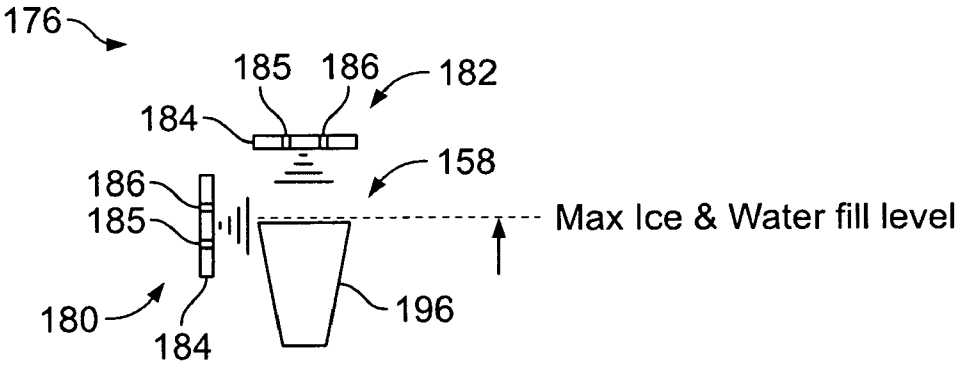


FIG. 6

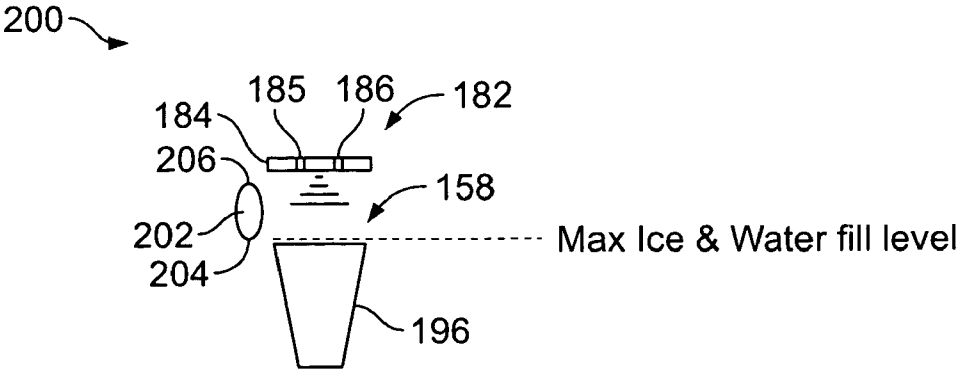


FIG. 7

# METHOD AND SYSTEM FOR DISPENSING ICE AND/OR A LIQUID

## BACKGROUND OF THE INVENTION

This invention relates generally to ice and/or liquid dispensers and, more particularly, to methods and systems for ice and/or liquid dispensers having a touchless detecting device.

Some conventional appliances, such as refrigerators, include a dispensing system having a storage tank for cooling and storing water, an ice maker, and a dispenser to dispense ice and/or water. The dispensing system dispenses ice and/or water upon actuating a lever located within a door of the refrigerator. The user physically touches or contacts the lever to exert a sufficient force to move the lever and actuate the dispensing system. Users may have difficulty actuating the lever. Additionally, ice and/or water is continuously dispensed as long as the lever is actuated. Users may not timely deactivate the lever and ice and/or water may undesirably spill from a container positioned with respect to the dispenser. Further, repeated contact with the lever may promote unsanitary conditions.

Some conventional dispensing systems include a detection device having an acoustic sensor that emits an acoustic pulse and receives an associated acoustic pulse as a result of an object reflecting the emitted acoustic pulse. The detection device then determines a position of the object based on the reflected acoustic pulse. However, the acoustic sensor cannot effectively detect an object positioned at a close proximity, such as within about 20 cm. Additionally, the acoustic pulse is radiated in a conical pattern at a distance greater than about 20 cm, which results in undesirable clutter and noise. As such, a plurality of acoustic sensors may be required for detecting an object beyond a distance of about 20 cm, which undesirably increases the number of components and/or the manufacturing cost.

## BRIEF DESCRIPTION OF THE INVENTION

In one aspect, a touchless dispensing system is provided. The touchless dispensing system includes a dispenser configured to dispense ice and/or at least one liquid. A detection device is positioned with respect to the dispenser. The detection device is configured to detect a container positioned with respect to the dispenser without contacting the container. The detection device is further configured to generate a signal confirming a position of the container with respect to the dispenser. The dispenser is activated to dispense an amount of ice and/or an amount of the at least one liquid into the container in response to the signal generated by the detection device.

In another aspect, a refrigeration appliance is provided. The refrigeration appliance includes a cabinet defining at least one refrigeration compartment. A first door is coupled to the cabinet and movable between an open position and a closed position. In the closed position, the door is configured to sealingly enclose the at least one refrigeration compartment. The first door defines a recess. A dispenser is positioned within the cabinet. The dispenser is configured to dispense an amount of ice and/or an amount of a liquid into a container positioned within the recess. A detection device is positioned with respect to the recess. The detection device is configured to detect a container positioned within the recess without contacting the container. The detection device is further configured to generate a signal confirming a position of the container within the recess. A controller is in operational control communication with the detection device and the dispenser.



The controller is configured to activate the dispenser in response to a signal received from the detection device.

In still another aspect, a method for dispensing at least one of an amount of ice and an amount of liquid into a container is provided. The method includes providing a dispensing system including a housing defining a recess. A detection device is positioned with respect to the recess and a dispenser is positioned with respect to the recess. A container positioned within the recess is detected and a signal is generated confirming a position of the container within the recess. The dispenser is activated in response to the signal received from the detection device to dispense an amount of ice and/or an amount of liquid into the container.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of an exemplary refrigerator.

FIG. **2** is a front view of the refrigerator shown in FIG. **1** with a dispensing system.

FIG. **3** is a schematic view of an exemplary dispensing system mounted within a recess defined by the refrigerator.

FIG. **4** is a schematic view of an exemplary ultrasonic sensor module suitable for use with the dispensing system.

FIG. **5** is a schematic view of the dispensing system shown in FIG. **3** during a dispensing process.

FIG. **6** is a schematic view of the dispensing system shown in FIG. **3** during a dispensing process.

FIG. **7** is a schematic view of an alternative dispensing system mounted within a recess defined by the refrigerator.

## DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** is a perspective view of an exemplary refrigerator **100** in which exemplary embodiments of the present invention may be practiced and for which the benefits of the invention may be realized. Refrigerator **100** includes a fresh food storage compartment **102** and a freezer storage compartment **104**. Fresh food compartment **102** and freezer storage compartment **104** are arranged side-by-side.

It should be apparent to those skilled in the art and guided by the teachings herein provided that the described methods and apparatus may likewise be practiced with alternative appliances, with suitable modification. Therefore, refrigerator **100** as described and shown herein is for illustrative purposes only and is not intended to limit the herein described methods and apparatus.

Fresh food storage compartment **102** and freezer storage compartment **104** are arranged side-by-side and contained within an outer case **106** and inner liners **108** and **110**. A space between outer case **106** and inner liners **108** and **110**, and between inner liners **108** and **110**, is filled with foamed-in-place insulation. Outer case **106** normally is formed by folding a sheet of a suitable material, such as pre-painted steel, into an inverted U-shape to form top and side walls of outer case **106**. A bottom wall of outer case **106** normally is formed separately and attached to the case side walls and to a bottom frame that provides support for refrigerator **100**. Inner liners **108** and **110** are molded from a suitable plastic material to form fresh food storage compartment **102** and freezer storage compartment **104**, respectively. Alternatively, inner liners **108** and **110** may be formed by bending and welding a sheet of a suitable metal, such as steel. The illustrative embodiment includes two separate inner liners **108** and **110** as it is a relatively large capacity unit and separate liners add strength and are easier to maintain within manufacturing tolerances. In smaller refrigerators, a single liner is formed and a mullion

spans between opposite sides of the liner to divide it into a freezer storage compartment and a fresh food storage compartment.

A breaker strip **112** extends between a case front flange and outer front edges of inner liners **108** and **110**. Breaker strip **112** is formed from a suitable resilient material, such as an extruded acrylo-butadiene-styrene based material (commonly referred to as ABS).

The insulation in the space between inner liners **108** and **110** is covered by another strip of suitable resilient material, which also commonly is referred to as a mullion **114**. Mullion **114** also preferably is formed of an extruded ABS material. Breaker strip **112** and mullion **114** form a front face, and extend completely around inner peripheral edges of outer case **106** and vertically between inner liners **108** and **110**. Mullion **114**, insulation between compartments, and a spaced wall of liners separating compartments, sometimes are collectively referred to herein as a center mullion wall **116**.

Shelves **118** and slide-out drawers **120** normally are provided in fresh food storage compartment **102** to support items being stored therein. A storage assembly **122** is provided in a lower portion of fresh food storage compartment **102**, and is selectively controlled, together with other refrigerator features, by a controller **123** according to user preference via manipulation of a control interface **124** mounted in an upper region of fresh food storage compartment **102** and coupled to controller **123**. In addition, at least one shelf **126** and at least one wire basket **128** are also provided in freezer storage compartment **104**. In alternative embodiments, a position of storage assembly **122**, controller **123**, and/or control interface **124** is varied in alternative embodiments.

Controller **123** is mounted within refrigerator **100**, and is programmed to perform functions described herein. As used herein, the term controller is not limited to just those integrated circuits referred to in the art as microprocessor, but broadly refers to computers, processors, microcontrollers, microcomputers, programmable logic controllers, application specific integrated circuits, and other programmable circuits, and these terms are used interchangeably herein.

In one embodiment, freezer storage compartment **104** includes an automatic ice maker **130** and a dispenser **131**, shown in FIG. **2**, provided in freezer door **132** such that ice and/or chilled water can be dispensed without opening freezer door **132**. As will become evident below, ice maker **130**, in accordance with conventional ice makers includes a number of electromechanical elements that manipulate a mold to shape ice as water freezes, a mechanism to remove or release ice from the mold, and a primary ice bucket for storage of ice produced in the mold. Periodically, the ice supply is replenished by ice maker **130** as ice is removed from the primary ice bucket. The storage capacity of the primary ice bucket is generally sufficient for normal use of refrigerator **100**.

Freezer door **132** and a fresh food door **134** close access openings to freezer storage compartment **104** and fresh food storage compartment **102**. Each door **132**, **134** is mounted by a top hinge **136** and a bottom hinge (not shown) to rotate about its outer vertical edge between an open position, as shown in FIG. **1**, and a closed position, as shown in FIG. **2**, sealingly closing the associated storage compartment. Freezer door **132** includes a plurality of storage shelves **138** and a sealing gasket **140**, and fresh food door **134** also includes a plurality of storage shelves **142** and a sealing gasket **144**.

As with known refrigerators, refrigerator **100** also includes a machinery compartment (not shown) that at least partially contains components for executing a known vapor compression cycle for cooling air. The components include a compressor (not shown), a condenser (not shown), an expansion device (not shown), and an evaporator (not shown) connected in series and charged with a refrigerant. The evaporator is a type of heat exchanger which transfers heat from air passing over the evaporator to a refrigerant flowing through the evaporator, thereby causing the refrigerant to vaporize. The cooled air is used to refrigerate one or more refrigerator or freezer compartments via fans (not shown). Collectively, the vapor compression cycle components in a refrigeration circuit, associated fans, and associated compartments are referred to herein as a sealed system. The construction of the sealed system is well known and therefore not described in detail herein, and the sealed system is operable to force cold air through the refrigerator.

FIG. **2** is a front view of refrigerator **100** with doors **132** and **134** in a closed position. A recess **158** is defined on a front surface of freezer door **132**, and a touchless dispensing system **160** is at least partially mounted on and/or within freezer door **132** and within recess **158**.

In one embodiment, recess **158** includes a back wall **162**, a top wall **164**, a bottom wall **166** and two side walls **168** coupled, molded or integrated with each other. Bottom wall **166** defines a support surface **169** for supporting a container, such as, without limitation, a cup, pitcher or bowl, (not shown) positioned within recess **158**. Dispensing system **160** includes dispenser **131** that extends into recess **158**, such as through top wall **164** of recess **158**. Dispenser **131** is configured to dispense ice and/or at least one liquid, such as chilled water, as desired. A user interface **174** is mounted on the front face of freezer door **132**. Controller **123** (shown in FIG. **1**) is coupled in operational control communication and/or signal communication with dispenser **131** and user interface **174**. As such, controller **123** may operate dispenser **131** according to user selection through user interface **174**. It should be apparent to those skilled in the art and guided by the teachings herein provided that dispenser **131** and/or user interface **174** may be mounted at any suitable position with respect to refrigerator **100** in alternative embodiments, such as on fresh food door **134**.

A detection device **176** is mounted with respect to recess **158**. In one embodiment, detection device **176** is mounted on or at least partially within back wall **162** of recess **158**. Detection device **176** is configured to detect a container, such as a cup or other suitable container, positioned adjacent to or within recess **158** without contact between components of detection device **176** and the container. Upon detection of the container, detection device **176** generates a signal confirming a position of the container, and transmits the generated signal to controller **123**. Controller **123** activates dispenser **131** in response to the signal received from detection device **176**. It is apparent to those skilled in the art and guided by the teachings herein provided that detection device **176** may be mounted at any suitable position on or with respect to refrigerator **100** in alternative embodiments.

FIG. **3** is a schematic view of dispensing system **160** including detection device **176** mounted within recess **158**. Device **176** includes a first detection assembly **180** and a second detection assembly **182**, substantially identical in structure. In one embodiment, first detection assembly **180** and/or a second detection assembly **182** is configured to transmit and/or receive acoustic waves or signals.

First detection assembly **180** is mounted on or at least partially within back wall **162** of recess **158** and second detection assembly **182** is mounted on or at least partially within top wall **164** of recess **158**. In one embodiment, each detection assembly **180**, **182** includes an ultrasonic sensor module **184**. Ultrasonic sensor module **184** includes a first

ultrasonic sensor **185** configured to emit or transmit ultrasonic waves or signals into recess **158** and/or through recess **158** and a second ultrasonic sensor **186** configured to receive or detect ultrasonic waves or signals, such as ultrasonic waves or signals transmitted by ultrasonic sensor **185** and reflected or redirected by an object, such as a container positioned within recess **158**. Detection assemblies **180**, **182** detect an object (not shown) positioned within recess **158** and are in signal communication with controller **123** (shown in FIG. **1**) to transmit a corresponding signal to controller **123**. In an alternative embodiment, detection device **176** includes only first detection assembly **180** or second detection assembly **182**.

FIG. **4** is a schematic view of an exemplary detection assembly **180** and/or **182** suitable for use with dispensing system **160**. In one embodiment, ultrasonic sensor module **184** of each detection assembly **180**, **182** includes at least one first ultrasonic sensor **185** and at least one second ultrasonic sensor **186** operatively coupled to controller **123**.

In one embodiment, first ultrasonic sensor **185** includes an ultrasonic transmitter **188** and second ultrasonic sensor **186** includes an ultrasonic receiver **190**. Ultrasonic transmitter **188** is energized or activated to periodically emit an ultrasonic signal, and ultrasonic receiver **190** receives a corresponding reflected ultrasonic signal, as described in greater detail below. In a particular embodiment, ultrasonic transmitter **188** and/or ultrasonic receiver **190** include at least one acoustic transducer, such as for example, at least one membrane acoustical-electrical transducer.

FIGS. **5** and **6** illustrate an exemplary dispensing system **160** including detection device **176** during a dispensing process.

During an exemplary dispensing process, ultrasonic sensor module **184** of first detection assembly **180** mounted with respect to recess back wall **162** and/or ultrasonic sensor module **184** of second detection assembly **182** mounted with respect to recess top wall **164** periodically generates an ultrasonic signal. A detecting period may vary depending on required or desired detection accuracy. In one embodiment, ultrasonic transmitters **188** transmit ultrasonic signals into recess **158** through outlets **194** defined within back wall **162** and top wall **164**, as shown in FIG. **3**. When a container, such as a cup **196**, is positioned adjacent or within recess **158**, the ultrasonic signal is reflected and/or redirected by cup **196**. The reflected and/or redirected signal is received or detected by ultrasonic receiver **190**. Corresponding ultrasonic sensor module **184** processes or analyzes the returned or reflected ultrasonic signal to facilitate determining geometric information for cup **196**. In a particular embodiment, controller **123**, in operational control communication with ultrasonic sensor module **184**, processes or analyzes the returned or reflected ultrasonic signal detected or sensed by ultrasonic sensor module **184** to determine geometric information for cup **196** based at least in part on data transmitted by ultrasonic sensor module **184**.

TABLE 1

| Cup presence (detected by first detection assembly) | Maximum fill level (detected by second detection assembly) | Activation of dispenser |
|---|---|---|
| Yes | No | Yes |
| Yes | Yes | No |
| No | Yes | No |
| No | No | No |

As illustrated in Table 1 above, first detection assembly **180** detects a relative position of cup **196** with respect to recess **158**. In one embodiment, first detection assembly **180** detects a distance of cup **196** with respect to back wall **162** of recess **158**. In a particular embodiment, first detection assembly **180** is activated when cup **196** is positioned no more than about 1.0 cm from back wall **162**. First detection assembly **180** is deactivated when cup **196** is positioned greater than about 1.5 cm from back wall **162**. First detection assembly **180** also detects a relative height of cup **196** with respect to support surface **169** of recess **158**. First detection assembly **180** detects that outlet **194** is covered when cup **196** substantially interferes with the acoustic signal transmitted therefrom. In a particular embodiment, outlet **194** is defined on or at least partially within back wall **162** and has a diameter of about 2.0 cm. As such, a height of cup **196** is detected when corresponding outlet **194** is substantially covered or blocked. Upon detecting the distance and the height, first detection assembly **180** determines the presence of cup **196**. First detection assembly **180** communicates with controller **123** to activate dispenser **131**.

During the exemplary dispensing process, second detection assembly **182** also detects a fill level of ice and/or liquid within cup **196**. Second detection assembly **182** communicates with controller **123** to deactivate dispenser **131** upon detecting a fill level that approaches or reaches a selected maximum fill level. In a particular embodiment, the maximum fill level is set at a height equal to the height of outlet **194** defined on back wall **162**. With cup **196** positioned at a height greater than the maximum fill level, dispenser **131** is activated. As such, liquid and/or ice is prevented from spilling from cup **196** during the dispensing process. In alternative embodiments, the maximum fill level may vary.

As shown in FIG. **5**, controller **123** operates dispenser **131** in response to signals received from first detection assembly **180** and/or second detection assembly **182**. When first detection assembly **180** and second detection assembly **182** communicate with controller **123** to activate dispenser **131**, for example, by transmitting an appropriate signal to controller **123**, controller **123** initiates activation of dispenser **131**. Controller **123** deactivates dispenser **131** when the liquid level and/or the ice level within cup **196** approaches or reaches the maximum fill level. As shown in FIG. **6**, controller **123** also deactivates dispenser **131** if first detection assembly **180** and/or second detection assembly **182** does not detect cup **196**. In a particular embodiment, controller **123** deactivates dispenser **131** if cup **196** or another suitable container is not positioned within recess **158** such that outlet **194** of detection assembly **180** is uncovered.

In a further embodiment, first detection assembly **180** is configured to sense or detect a presence of an object, such as a person, positioned or standing in front of refrigerator **100**. First detection assembly **180** accurately senses or detects a container positioned within recess **185** as well as an object, such as a person, at greater distances, for example, distances greater than about 20 mm.

FIG. **7** is a schematic view of an alternative detection device **200** mounted on or within recess **158**. Detection device **200** includes only one detection assembly **182** and a biased paddle **202**. The user pushes paddle **202** inwardly to activate dispenser **131** to dispense an amount of liquid and/or ice into cup **196**. Detection assembly **182** detects a fill level within cup **196**. Detection assembly **182** communicates with controller **123** (shown in FIG. **1**) to deactivate dispenser **131** when the fill level reaches a selected maximum fill level. In a particular embodiment, the maximum fill level is set at a height equal to a height of a bottom edge or portion **204** of

paddle **202**. As such, the liquid and/or ice within cup **196** is below an opposing top edge **206** of cup **196** to prevent or limit spills.

In one embodiment, detection device **176** includes two detection assemblies, such as two ultrasonic sensor modules **184**, positioned with respect to recess **185**. Each ultrasonic sensor module **184** includes first ultrasonic sensor **185** including ultrasonic transmitter **188** configured to transmit ultrasonic signals into and/or through recess **158** and second ultrasonic sensor **186** including ultrasonic receiver **190** configured to receive ultrasonic signals. Detection device **176** is configured to detect a presence of a container, such as a cup, within recess **158** and a presence of an object, such as a person, positioned with respect to refrigerator **100**, such as in front of touchless dispensing system **160**. Thus, detection device **176** is configured to detect a container positioned within recess **158**, a person standing in front of touchless dispensing system **160** and/or a level of liquid within the container during the dispensing process. With ultrasonic sensor module **184** configured such that ultrasonic transmitter **188** transmits ultrasonic signals and ultrasonic receiver **190** receives reflected or redirected ultrasonic signals, ultrasonic sensor module **184** accurately detects a position of an object to one-half of a wave length of a sound wave within recess **158** and to about one (1) meter outside recess **158**.

The above-described method and system for dispensing an amount of chilled water and/or ice into a container positioned with respect to a dispenser facilitates accurately filling the container with chilled water and/or ice to a desired fill level while preventing or limiting spills. More specifically, the touchless dispensing system includes a detection device configured to detect a container positioned within a recess without contact between the detection device components and the container. The detection device is further configured to generate a signal confirming a position of the container within the recess to activate a dispenser to dispense an amount of chilled water and/or ice into the container in response to the generated signal. In a particular embodiment, the detection device is further configured to detect a fill level within the container. As a result, the touchless dispensing system accurately dispenses an amount of chilled water, or any suitable liquid, and/or ice into the container to a desired fill level without undesirable contact between the dispensing system components and the container, while preventing or limiting spills.

Exemplary embodiments of a method and system for dispensing an amount of chilled water and/or ice into a container positioned with respect to a dispenser are described above in detail. The method and system are not limited to the specific embodiments described herein, but rather, steps of the method and/or components of the system may be utilized independently and separately from other steps and/or components described herein. Further, the described method steps and/or system components can also be defined in, or used in combination with, other methods and/or systems, and are not limited to practice with only the method and system as described herein.

While the invention has been described in terms of various specific embodiments, those skilled in the art will recognize that the invention can be practiced with modification within the spirit and scope of the claims.

What is claimed is:

**1**. A touchless dispensing system comprising:

a dispenser configured to dispense at least one of ice and at least one liquid; and

a detection device positioned with respect to a recess defined within a housing, wherein the recess comprises at least one wall, said detection device configured to detect a container positioned with respect to the dispenser without contacting the container and to detect a presence of a person positioned with respect to said dispenser, said detection device further configured to determine a distance between the container and said at least one wall and to determine a distance between the person and said at least one wall and to generate a signal confirming a position of the container with respect to the dispenser and confirming a position of the person with respect to said dispenser, said dispenser activated to dispense at least one of an amount of ice and an amount of the at least one liquid into the container in response to said signal generated by said detection device confirming the position of the container with respect to the dispenser and confirming the position of the person with respect to said dispenser.

**2**. A touchless dispensing system in accordance with claim **1** wherein said detection device further comprises at least one ultrasonic sensor module configured to transmit an ultrasonic signal and receive a corresponding reflected ultrasonic signal.

**3**. A touchless dispensing system in accordance with claim **2** wherein said ultrasonic sensor module further comprises an ultrasonic transmitter configured to transmit ultrasonic signals along a selected signal path and an ultrasonic receiver configured to receive ultrasonic signals.

**4**. A touchless dispensing system in accordance with claim **2** wherein said at least one ultrasonic sensor module further comprises a first ultrasonic sensor module configured to detect a relative position of the container with respect to said dispenser.

**5**. A touchless dispensing system in accordance with claim **4** wherein said at least one ultrasonic sensor module further comprises a second ultrasonic sensor module configured to detect a fill level within the container.

**6**. A touchless dispensing system in accordance with claim **1** further comprising a controller in operational control communication with said detection device and said dispenser, said controller configured to activate said dispenser in response to a signal received from said detection device.

**7**. A touchless dispensing system in accordance with claim **6** wherein said controller is configured to activate said dispenser with the container at a first position with respect to said detection device and deactivate said dispenser when said fill level reaches a maximum fill level.

**8**. A refrigeration appliance comprising:

a cabinet defining at least one refrigeration compartment;

a first door coupled to said cabinet and movable between an open position and a closed position, in the closed position said door configured to sealingly enclose said at least one refrigeration compartment, said first door comprising at least one wall defining a recess;

a dispenser positioned within said cabinet, said dispenser configured to dispense at least one of an amount of ice and an amount of a liquid into a container positioned within said recess;

a detection device positioned with respect to said recess, said detection device configured to detect a container positioned within said recess without contacting the container and configured to detect a presence of a person, said detection device further configured to:

determine a distance between the container and said at least one wall and a distance between the person and said at least one wall, and

generate a signal confirming a position of the container within said recess and the presence of the person; and

a controller in operational control communication with said detection device and said dispenser, said controller

configured to activate said dispenser in response to a signal received from said detection device confirming the position of the container within said recess and the presence of the person.

**9**. A refrigeration appliance in accordance with claim **8** wherein said detection device further comprises at least one ultrasonic sensor module configured to transmit an ultrasonic signal and receive a corresponding returned ultrasonic signal redirected by the container.

**10**. A refrigeration appliance in accordance with claim **9** wherein said at least one ultrasonic sensor module further comprises a first ultrasonic sensor module configured to detect at least one of a distance of the container with respect to said detection device and a height of the container with respect to a support surface formed within said recess.

**11**. A refrigeration appliance in accordance with claim **9** wherein said at least one ultrasonic sensor module further comprises a second ultrasonic sensor module configured to detect a fill level within the container.

**12**. A refrigeration appliance in accordance with claim **11** wherein said controller is configured to deactivate said dispenser when the fill level reaches a maximum fill level.

**13**. A refrigeration appliance in accordance with claim **9** wherein said at least one ultrasonic sensor module further comprises an ultrasonic transmitter configured to transmit the ultrasonic signal into said recess.

**14**. A refrigeration appliance in accordance with claim **13** wherein said at least one ultrasonic sensor module further comprises an ultrasonic receiver configured to receive a redirected ultrasonic signal indicating the container positioned within said recess, said controller configured to initiate activation of said dispenser with the container substantially interfering with the transmitted acoustic signal.

**15**. A method for dispensing at least one of an amount of ice and an amount of liquid into a container, said method comprising:

providing a dispensing system comprising a housing having at least one wall defining a recess, a detection device positioned with respect to the recess, and a dispenser positioned with respect to the recess;

detecting a container positioned within the recess;

detecting a person positioned with respect to the dispensing system;

determining a distance between the container and the at least one wall;

determining a distance between the person and the at least one wall;

generating a signal confirming a position of the container within the recess and a position of the person; and

activating the dispenser in response to the signal received from the detection device to dispense at least one of an amount of ice and an amount of liquid into the container, wherein the signal confirms the position of the container and the position of the person.

**16**. A method in accordance with claim **15** wherein said detecting a container positioned within the recess further comprises:

positioning at least one ultrasonic sensor module with respect to the recess;

operatively coupling the at least one ultrasonic sensor module with a controller;

transmitting an ultrasonic signal into the recess; and

receiving a reflected ultrasonic signal through the ultrasonic sensor module.

**17**. A method in accordance with claim **16** wherein said positioning at least one ultrasonic sensor module with respect to the recess further comprises positioning a first ultrasonic sensor module with respect to the recess, the first ultrasonic sensor module configured to detect a fill level within the container.

**18**. A method in accordance with claim **17** further comprising de-deactivating the dispenser in response to a signal received from the first ultrasonic sensor module.

**19**. A method in accordance with claim **17** wherein said positioning at least one ultrasonic sensor module with respect to the recess further comprises positioning a second ultrasonic sensor module with respect to the recess, the second ultrasonic sensor module configured to detect a relative position of the container with respect to the recess.

**20**. A method in accordance with claim **19** further comprising activating the dispenser in response to a signal received from the second ultrasonic sensor module.

**21**. A method in accordance with claim **15** wherein, upon activating the dispenser to dispense at least one of ice and liquid into the container, said method further comprising detecting a level of the at least one of ice and liquid within the container.

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